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Michael Anthony Pugel

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EXAMINER

PHU, PHUONG M

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/942,810

Applicant(s)

PUGEL, MICHAEL ANTHONY

Examiner

Phuong Phu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-27 and 29 is/are rejected.
- 7) ☒ Claim(s) 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

This Office Action is responsive to the Amendment filed on 4/15/05.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8-23, 25-27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindbergh et al (6,240,140), cited in the IDS filed on 12/19/03, in view of Frenkel (5,838,268), (previously cited).

-Regarding to claim 1, see figures 3-5, and col. 5, line 40 to col. 14, line 43, Lindbergh et al discloses a method and associated system comprising:

step/means (38) of extracting from a digital data stream (14) , data (outputted from (38) carried by at least two carrier signals wherein each of said carrier signals was carried on a particular channel (CHANNEL 0,..., CHANEL M-1); and

step/means (40, 44, 42,46) of combining at least portions of data extracted from said at least two carrier signals to form a complete bitstream (outputted from (24)),

wherein said extracted data is associated with it stream identifier (60) and sequence code information (64, 66, 68) (see figure 5) for, respectively, identifying the complete bitstream corresponding to the extracted data and determining the position of the extracted data within the complete bitstream (see also figure 4, and col. 6, line 43 to col. 8, line 25).

Lindbergh et al does not disclose step/means of converting a plurality of carrier signals into said digital data stream.

In a similar endeavor, Frenkel discloses data a digital data stream (INPUT BIT STREAM) is converted into an analog signal stream (OUTPUT ANALOG SIGNAL) comprising a plurality of carrier signals for a transmission (see figure 1 and col. 7, lines 52 to col. 8, line 50), and at a receiver end, the analog signal stream, after being received, is analog-to-digital converted (by analog-to-digital convert step/means of (70, 74, 80, 90, 100, 110)) back to a digital data stream (OUTPUT BIT STREAM) for further processing (see figure 2, and col. 8, line 52 to col. 9, line 22).

Since Lindbergh et al does not disclose how said digital data stream (14) is received, in detail, therefore, for an application for a system implementation for receiving said digital data stream (14) in Lindbergh et al , it would have been obvious for one skilled in the art, when building or carrying out Lindbergh et al invention, to implement Lindbergh et al with a converting step in such a way that said bit data stream (14), at a transmitter end, is converted into an analog signal stream comprising a plurality of carrier signals, and at a receiver end, the analog signal stream, after being received, is analog-to-digital converted back to said digital data stream (14) for further processing, as taught by Frenkel.

Further Lindbergh et al in view of Frenkel teaches that said converting step comprises:

a substep/means (60), which includes filters (for band limiting) and mixers (for modulating), for band limiting a received signal to pass said plurality of carrier signals modulated, thereon (see Frenkel, (60) of figure 2, and col. 6, lines 61-65) ; and

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a substep/means (70) of converting the band limited received signal to a digital signal (see Frenkel , (70) of figure 2, and col. 8, lines 65-67).

-Regarding to claim 2, Lindbergh et al discloses that said complete bitstream comprises transport packets (58) (see figure 4), said method further comprising: selecting those transport packets within the extracted data having a stream identifier (60) (see figure 5) corresponding to said complete bitstream (52) (see figure 4); and arranging the selected packets according to the respective sequence codes to form said complete bitstream (see also figures 10-18, and col. 11, line 18 to col. 14, line 37).

-Regarding to claim 3, Lindbergh et al discloses that the extracted data comprise transport stream packets (58) (including data load and excluding HEADER's) according to a first transport format, and the complete bitstream (52) comprises a transport stream packet (data load) of the first transport format (see figure 4).

-Regarding to claim 4, Lindbergh et al discloses that the extracted data comprise transport stream packets (58) (see figure 4) according to a first transport format for (56) (see figure 5), and the complete bitstream (52) comprises a transport stream (e.g., DATA SET 1) of a second transport format (see figure 4).

-Regarding to claim 5, Lindbergh et al discloses that transport stream packets according to said first transport stream format are carried within a payload portion of transport stream packets according to said second transport format (see figure 4).

-Regarding to claim 6, said stream identifier and said sequence code is stored in a header portion of said transport stream packets according to said first format (see figures 4 and 5).

-Regarding to claim 15, Lindbergh et al discloses that some of said transport stream packets according to said first format have stored therein within said header portion channel identification (66) and time of transmission information (64, 68) for, respectively, indicating which of said plurality of carrier signals carry portions of said complete bitstream and the time said portions will be carried (see figure 5).

-Regarding to claim 8, Lindbergh et al in view of Frenkel discloses that extracting comprises:

step (74, 80, 90) of derotating each of the digitized plurality of carrier signals to produce respective derotated carrier signals ($G_0(n), \dots, G_{N-1}(n)$) (see Frenkel, figures 2 and 10a); and

step (100, 110) of demodulating each of at least two filtered carrier signals to extract therefrom respective data bearing streams (see Frenkel, figures 2, 12 and 13).

-Regarding to claim 9, Lindbergh et al in view of Frenkel discloses that extracting comprises step (90) of filtering each of the derotated carrier signals to reduce non-channel spectral energy (see Frenkel, figures 2 and 10).

Lindbergh et al in view of Frenkel does not disclose step of decimating each of the filtered signals to reduce the number of data-representative samples.

However, decimating a digital signal to reduce the number of data-representative samples is well known in the art and the examiner takes Official Notice.

It would have been obvious for one skilled in the art to implement step of decimating each of the filtered signals, in Lindbergh et al in view of Frenkel, to reduce the number of data-representative samples for further processing so that the decimating would increase a dynamic

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range and shorting processing time for said further processing, and for reducing the number of the processing data to extent that the information contained in the data is not damage.

-Claim 10 is rejected with similar reasons set forth for claim 15.

-Regarding to claim 11, Lindbergh et al discloses that said extracting includes:

step (40) of identifying a carrier signal having data corresponding to a desired complete bitstream; and

step (44) of processing said identified carrier signal to extract said data corresponding to said desired complete bitstream (see figures 3 and 10-18).

-Regarding to claim 12, Lindbergh et al discloses that said extracting comprises: step (see figures 10) of determining when said identified carrier signal will include said data corresponding to said desired complete bitstream, said identified carrier signal being processed at a determined time (see col. 11, lines 18-61).

-Regarding to claim 13, Lindbergh et al discloses that some of said extracted data has associated with it channel identification information (64, 66, 68) for indicating which of said plurality of carrier signals will carry said data corresponding to said desired complete bitstream (see figure 5).

-Claim 14 is rejected with similar reasons set forth for claim 15.

-Regarding to claim 16, see figures 3-5, and col. 5, line 40 to col. 14, line 43, Lindbergh et al discloses a method (see figure 3) at a receiver site wherein the method comprises:

step (38, 40, 44, 42, 46) of combining data from at least two data bearing streams of a received data stream signal (14) into a resultant data stream (24), said at least two data bearing streams comprising respective portions of said resultant data stream (24).

Lindbergh et al does not disclose steps of band limiting a received signal to pass a plurality of carrier signals, each of said carrier signal having modulated thereon, and within a channel bandwidth, a respective data bearing stream; converting the band limited received signal to a digital signal; derotating each of the digitized carrier signals to produce respective derotated carrier signals; and demodulating each of at least two filtered carrier signals to extract therefrom said received stream signal (14).

Frenkel teaches a procedure at a receiver site of demodulating a received signal which is modulated and transmitted from a transmitter site, and is received at the receiver site, (see figures a and 2 and col. 7, line 52 to col. 9, line 22) wherein the procedure (see figures 2) comprises:

step (60) of band limiting a received signal to pass a plurality of carrier signals, each of said carrier signal having modulated thereon, and within a channel bandwidth, a respective data bearing stream;

step (70) of converting the band limited received signal to a digital signal;

step (74) of derotating each of the digitized carrier signals to produce respective derotated carrier signals; and

step (80, 90, 100, 110) of demodulating each of at least two filtered carrier signals to extract therefrom a data stream signal (INPUT ANALOG SIGNAL).

Since Lindbergh et al does not disclose in detail how said received data stream signal (14) is managed to be transmitted at a transmitter site and how the receiver site receives the signal being transmitted from said transmitter site and processes the signal in order to recover said received data stream signal (14), it would have been obvious for a person skilled in the art

to implement Lindbergh et al with modulation and demodulation techniques for a transmitter and a receiver, as taught by Frenkel, in such a way that data stream signal (14) before being transmitted at the transmitter site is modulated, as taught by Frenkel, and transmitted to the receiver site, and in turn, the receiver site, after received a signal transmitted from the transmitter site, performing steps of band limiting said received signal to pass a plurality of carrier signals, each of said carrier signal having modulated thereon, and within a channel bandwidth, a respective data bearing stream; converting the band limited received signal to a digital signal; derotating each of the digitized carrier signals to produce respective derotated carrier signals; and demodulating each of at least two filtered carrier signals to extract therefrom said received stream signal (14), as taught by Frenkel, so that such the implementation would enable Lindbergh et al method in view of Frenkel to manage how data stream signal (14) is transmitted at the transmitter site and recovered at the receiver site.

-Claims 17-23 are rejected with similar reasons set forth for claims 1, 6 and 8-15.

-Regarding to claim 25, as similarly applied to claims 1, 6, 8-15, see figures 3-5, and col. 5, line 40 to col. 14, line 43, Lindbergh et al discloses a system used at a receiver wherein the system comprises:

a processor (38, 40, 44, 42) for combining portions of a data signal (14) to produce a complete bitstream (24), said data having associated with it stream identifier and sequence code information for determining, respectively, the complete bitstream corresponding to the data and the sequence within the complete bitstream of the data.

Lindbergh et al does not disclose a band limiter for receiving an analog signal having a plurality of carrier signals and respective data modulated thereon, and for primarily passing

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only the plurality of carrier signals and the respective data modulated thereon; an analog to digital converter for converting the plurality of carrier signals into a digital data stream; and a plurality of channel processors, for extracting from said digital data stream, data carried by respective carrier signals.

Frenkel teaches a system used at a receiver site of demodulating a received signal which is modulated and transmitted from a transmitter site, and is received at the receiver site, (see figures a and 2 and col. 7, line 52 to col. 9, line 22) wherein the system (see figures 2) comprises:

a band limiter (60) for receiving an analog signal having a plurality of carrier signals and respective data modulated thereon, and for primarily passing only the plurality of carrier signals and the respective data modulated thereon within a bandwidth of interest;

an analog to digital converter (70) for converting the plurality of carrier signals into a digital data stream; and

a plurality of channel processors (74, 80, 90, 100, 110), for extracting from said digital data stream, data (OUTPUT BIT STREAM) carried by respective carrier signals (see figures 2, 10 and 12).

Since Lindbergh et al does not disclose in detail how said data signal (14) is managed to be transmitted at a transmitter site and how the receiver site receives the signal being transmitted from said transmitter site and processes the signal in order to recover said data signal (14), it would have been obvious for a person skilled in the art to implement Lindbergh et al with modulation and demodulation techniques for a transmitter and a receiver, as taught by Frenkel, in such a way that data signal (14) before being transmitted at the transmitter site is

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modulated, as taught by Frenkel, and transmitted to the receiver site, and in turn, the receiver site, after received an analog signal transmitted from the transmitter site, utilizes a band limiter for receiving said analog signal having a plurality of carrier signals and respective data modulated thereon, and for primarily passing only the plurality of carrier signals and the respective data modulated thereon; an analog to digital converter for converting the plurality of carrier signals into a digital data stream; and a plurality of channel processors, for extracting from said digital data stream, said data signal (14) carried by respective carrier signals, as taught by Frenkel, so that such the implementation would enable Lindbergh et al method in view of Frenkel to manage how said data signal (14) is transmitted at the transmitter site and recovered at the receiver site.

-Claims 26 and 27 are rejected with similar reasons set forth for claims 1, 6 and 8-15.

-Regarding to claim 29, in Lindbergh et al in view of Frenkel, plurality of carrier signals can substantially conform to a commonly polarized group of channels, representative by a transmitted signal (OUTPUT ANALOG SIGNAL) provided by a transmitter (shown in Frenkel, figure 1).

3. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frenkel in view of Nagano (5,808,463).

-Regarding to claim 24, see figures 2, 10a, 12 and 13, and col. 8, line 59 to col.9, line 22, col. 12, line 31 to col. 13, line 4, Frenkel discloses a method (see figure 2) comprising:

step (60) of band limiting a received signal to pass substantially those frequencies occupying a spectral region between a first frequency f_1 (5 MHz) and a second frequency f_2 (42 MHz) (see col. 8, lines 62-65);

step (70) of converting, using an analog-to-digital converter having a sampling rate f_s , the band-limited signal to produce a digital signal therefrom;

step (74) of derotating each of a plurality of data bearing signals within said digital signal to produce respective derotated signals;

step (90) of filtering each of the respective derotated signals to remove channel energy outside of a respective defined channel (see also figure 10); and

step (100, 110) of demodulating each of at least two filtered carrier signals to extract therefrom respective data bearing signals (see also figures 12 and 13); and

step (110) of combining data bearing signals obtained from at least two filtered carrier signals into a single data signal (OUTPUT BIT STREAM) (see also figure 13).

Frenkel does not disclose whether said sampling rate f_s is greater than f_2 .

However, according to the Nyquist condition, said sampling rate must be at least twice the bandwidth of a signal to be sampled by said sampling rate.

It would have been obvious for a person skilled in the art to implement Frenkel in such a way that said sampling rate could be a value smaller or greater than f_2 as long as said value is at least twice the bandwidth ($=f_2-f_1$) in order to satisfy the Nyquist condition so that the sampling process during the converting step (70) would avoid aliasing problems.

Frenkel does not disclose step of decimating each of the filtered signals to reduce the number of samples representing said data bearing signals.

Nagano teach step (107) of decimating a digital signal to reduce the number of data-representative samples for further processing in a receiver for recovering data (see figure 5, and col. 6, lines 46-57).

It would have been obvious for one skilled in the art to implement step of decimating each of the filtered signals, in Frenkel, to reduce the number of data-representative samples for further processing, as taught by Nagano, so that the decimating would increase a dynamic range and shorting processing time for said further processing, and for reducing the number of the processing data to extent that the information contained in the data is not damage.

Allowable Subject Matter

4. Claim 28 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments filed on 4/15/05 have been fully considered but they are not, in part, persuasive.

Claims rejections, under 35 USC 112, to claims 2, 8, 11-14 and 24 have been withdrawn since the claims were amended to overcome the rejections.

Applicant's argument with respect to rejections, under 35 USC 103, to claims 1, 16, 24 and 25, are not persuasive.

Applicant mainly argues that (i) with respect to claim 1, the previously cited references do not teach or suggest the limitation "combining at least portions of data extracted from said at least two carrier signals to form a complete bitstream, said extracted data having associated with it stream identifier and sequence code information for, respectively, identifying the complete bitstream corresponding to the extracted data and determining the position of the extracted data within the complete bitstream" and the limitation "said converting step comprises: band limiting

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a received signal to pass said plurality of carrier signals modulated thereon; and converting the band limited received signal to a digital signal”;

(ii) with respect to claim 16, the previously cited references do not teach or suggest the limitation “band limiting a received signal to pass a plurality of carrier signals, each of said carrier signal having modulated thereon, and within a channel bandwidth, a respective data bearing stream; converting the band limited received signal to a digital signal” and the limitation “combining data from at least two data bearing streams into a resultant data stream, said at least two data bearing streams comprising respective portions of said resultant data stream”;

(iii) with respect to claim 24, the previously cited references do not teaches or suggests the limitations “said sampling rate f_s being greater than f_2 ” and the limitation “combining at least respective portions of at least two of the resulting decimated data bearing signals into a single data signal”, and

(iv) with respect to claim 25, the previously cited references do not teach or suggest the limitation “a band limiter for receiving an analog signal having a plurality of carrier signals and respective data modulated thereon, and for primarily passing only the plurality of carrier signals and the respective data modulated thereon” and the limitation “a processor, for combining at least portions of said data extracted from at least two carrier signals to produce a complete bitstream, said extracted data having associated with it stream identifier and sequence code information for determining, respectively, the complete bitstream corresponding to the data and the sequence within the complete bitstream of the data”.

Regarding to part (i), the examiner respectfully disagrees. As being explained in the above rejection to claim 1 in this Office Action, Lindbergh et al teaches step/means (40, 44,

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42,46), which is considered equivalent with the limitation “combining at least portions of data extracted from said at least two carrier signals to form a complete bitstream, said extracted data having associated with it stream identifier and sequence code information for, respectively, identifying the complete bitstream corresponding to the extracted data and determining the position of the extracted data within the complete bitstream”, and Frenkel teaches a substeps/means (60, 70) which is considered equivalent with the limitation “said converting step comprises: band limiting a received signal to pass said plurality of carrier signals modulated thereon; and converting the band limited received signal to a digital signal”.

Regarding to part (ii), the examiner respectfully disagrees. As being explained in the above rejection to claim 16 in this Office Action, Frenkel teaches step (60, 70), which is considered equivalent with the limitation “band limiting a received signal to pass a plurality of carrier signals, each of said carrier signal having modulated thereon, and within a channel bandwidth, a respective data bearing stream; converting the band limited received signal to a digital signal”; and Lindbergh et al teaches step (38, 40, 44, 42, 46), which is considered equivalent with the limitation “combining data from at least two data bearing streams into a resultant data stream, said at least two data bearing streams comprising respective portions of said resultant data stream”.

Regarding to part (iii), the examiner respectfully disagrees. As being explained in the above rejection to claim 24 in this Office Action, Frenkel does not disclose whether said sampling rate f_s is greater than f_2 . However, according to the Nyquist condition, said sampling rate must be at least twice the bandwidth of a signal to be sampled by said sampling rate. It would have been obvious for a person skilled in the art to implement Frenkel in such a way that

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said sampling rate could be a value smaller or greater than f_2 as long as said value is at least twice the bandwidth ($=f_2-f_1$) in order to satisfy the Nyquist condition so that the sampling process during the converting step (70) would avoid aliasing problems. Further, Frenkel teaches step (110), which is considered equivalent with the limitation “combining at least respective portions of at least two of the resulting decimated data bearing signals into a single data signal”.

Regarding to part (iv), the examiner respectfully disagrees. As being explained in the above rejection to claim 25 in this Office Action, Frenkel teaches a band limiter (60), which is considered equivalent with the limitation “a band limiter for receiving an analog signal having a plurality of carrier signals and respective data modulated thereon, and for primarily passing only the plurality of carrier signals and the respective data modulated thereon”; and Lindbergh et al teaches a processor (38, 40, 44, 42), which is considered equivalent with the limitation “a processor, for combining at least portions of said data extracted from at least two carrier signals to produce a complete bitstream, said extracted data having associated with it stream identifier and sequence code information for determining, respectively, the complete bitstream corresponding to the data and the sequence within the complete bitstream of the data”.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (6:30-2:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phuong Phu

Phuong Phu
06/01/05

PHUONG PHU
PRIMARY EXAMINER

Phuong Phu
Primary Examiner
Art Unit 2631